

SEQUENCE LISTING

(1) GENERAL INFORMATION:

- (i) APPLICANT: ST. GEORGE-HYSLOP, PETER H
ROMMENS, JOHANNA M
FRASER, PAUL E
- (ii) TITLE OF INVENTION: GENETIC SEQUENCES AND PROTEINS RELATED
TO ALZHEIMER'S DISEASE AND USES THEREFOR.
- (iii) NUMBER OF SEQUENCES: 2
- (iv) CORRESPONDENCE ADDRESS:
(A) ADDRESSEE: LERNER, DAVID, LITTENBERG, KRUMHOLZ &
MENTLIK
(B) STREET: 600 SOUTH AVENUE WEST
(C) CITY: WESTFIELD
(D) STATE: NJ
(E) COUNTRY: USA
(F) ZIP: 07090-1497
- (v) COMPUTER READABLE FORM:
(A) MEDIUM TYPE: Floppy disk
(B) COMPUTER: IBM PC compatible
(C) OPERATING SYSTEM: PC-DOS/MS-DOS
(D) SOFTWARE: ASCII
- (vi) CURRENT APPLICATION DATA:
(A) APPLICATION NUMBER:
(B) FILING DATE:
(C) CLASSIFICATION:
- (viii) ATTORNEY/AGENT INFORMATION:
(A) NAME: PALISI, THOMAS M
(B) REGISTRATION NUMBER: 36,629
(C) REFERENCE/DOCKET NUMBER: SCHERING 3.0-033
- (ix) TELECOMMUNICATION INFORMATION:
(A) TELEPHONE: (908) 654-5000
(B) TELEFAX: (908) 654-7866

(2) INFORMATION FOR SEQ ID NO:1:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 467 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear
 - (ii) MOLECULE TYPE: protein
 - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:
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| Met | Thr | Glu | Leu | Pro | Ala | Pro | Leu | Ser | Tyr | Phe | Gln | Asn | Ala | Gln | Met |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Ser | Glu | Asp | Asn | His | Leu | Ser | Asn | Thr | Val | Arg | Ser | Gln | Asn | Asp | Asn |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Arg | Glu | Arg | Gln | Glu | His | Asn | Asp | Arg | Arg | Ser | Leu | Gly | His | Pro | Glu |
| | | | 35 | | | | | 40 | | | | 45 | | | |

Pro Leu Ser Asn Gly Arg Pro Gln Gly Asn Ser Arg Gln Val Val Glu
 50 55 60
 Gln Asp Glu Glu Glu Asp Glu Glu Leu Thr Leu Lys Tyr Gly Ala Lys
 65 70 75 80
 His Val Ile Met Leu Phe Val Pro Val Thr Leu Cys Met Val Val Val
 85 90 95
 Val Ala Thr Ile Lys Ser Val Ser Phe Tyr Thr Arg Lys Asp Gly Gln
 100 105 110
 Leu Ile Tyr Thr Pro Phe Thr Glu Asp Thr Glu Thr Val Gly Gln Arg
 115 120 125
 Ala Leu His Ser Ile Leu Asn Ala Ala Ile Met Ile Ser Val Ile Val
 130 135 140
 Val Met Thr Ile Leu Leu Val Val Leu Tyr Lys Tyr Arg Cys Tyr Lys
 145 150 155 160
 Val Ile His Ala Trp Leu Ile Ile Ser Ser Leu Leu Leu Leu Phe Phe
 165 170 175
 Phe Ser Phe Ile Tyr Leu Gly Glu Val Phe Lys Thr Tyr Asn Val Ala
 180 185 190
 Val Asp Tyr Ile Thr Val Ala Leu Leu Ile Trp Asn Phe Gly Val Val
 195 200 205
 Gly Met Ile Ser Ile His Trp Lys Gly Pro Leu Arg Leu Gln Gln Ala
 210 215 220
 Tyr Leu Ile Met Ile Ser Ala Leu Met Ala Leu Val Phe Ile Lys Tyr
 225 230 235 240
 Leu Pro Glu Trp Thr Ala Trp Leu Ile Leu Ala Val Ile Ser Val Tyr
 245 250 255
 Asp Leu Val Ala Val Leu Cys Pro Lys Gly Pro Leu Arg Met Leu Val
 260 265 270
 Glu Thr Ala Gln Glu Arg Asn Glu Thr Leu Phe Pro Ala Leu Ile Tyr
 275 280 285
 Ser Ser Thr Met Val Trp Leu Val Asn Met Ala Glu Gly Asp Pro Glu
 290 295 300
 Ala Gln Arg Arg Val Ser Lys Asn Ser Lys Tyr Asn Ala Glu Ser Thr
 305 310 315 320
 Glu Arg Glu Ser Gln Asp Thr Val Ala Glu Asn Asp Asp Gly Gly Phe
 325 330 335
 Ser Glu Glu Trp Glu Ala Gln Arg Asp Ser His Leu Gly Pro His Arg
 340 345 350
 Ser Thr Pro Glu Ser Arg Ala Ala Val Gln Glu Leu Ser Ser Ser Ile
 355 360 365
 Leu Ala Gly Glu Asp Pro Glu Glu Arg Gly Val Lys Leu Gly Leu Gly
 370 375 380

Asp Phe Ile Phe Tyr Ser Val Leu Val Gly Lys Ala Ser Ala Thr Ala
 385 390 395 400
 Ser Gly Asp Trp Asn Thr Thr Ile Ala Cys Phe Val Ala Ile Leu Ile
 405 410 415
 Gly Leu Cys Leu Thr Leu Leu Leu Leu Ala Ile Phe Lys Lys Ala Leu
 420 425 430
 Pro Ala Leu Pro Ile Ser Ile Thr Phe Gly Leu Val Phe Tyr Phe Ala
 435 440 445
 Thr Asp Tyr Leu Val Gln Pro Phe Met Asp Gln Leu Ala Phe His Gln
 450 455 460
 Phe Tyr Ile
 465

(2) INFORMATION FOR SEQ ID NO:2:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 449 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

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 Glu Gly Arg Gln Gly Pro Glu Asp Gly Glu Asn Thr Ala Gln Trp Arg
 35 40 45
 Ser Gln Glu Asn Glu Glu Asp Gly Glu Glu Asp Pro Asp Arg Tyr Val
 50 55 60
 Cys Ser Gly Val Pro Gly Arg Pro Pro Gly Leu Glu Glu Glu Leu Thr
 65 70 75 80
 Leu Lys Tyr Gly Ala Lys His Val Ile Met Leu Phe Val Pro Val Thr
 85 90 95
 Leu Cys Met Ile Val Val Val Ala Thr Ile Lys Ser Val Arg Phe Tyr
 100 105 110
 Thr Glu Lys Asn Gly Gln Leu Ile Tyr Thr Pro Phe Thr Glu Asp Thr
 115 120 125
 Pro Ser Val Gly Gln Arg Leu Leu Asn Ser Val Leu Asn Thr Leu Ile
 130 135 140
 Met Ile Ser Val Ile Val Val Met Thr Ile Phe Leu Val Val Leu Tyr
 145 150 155 160
 Lys Tyr Arg Cys Tyr Lys Phe Ile His Gly Trp Leu Ile Met Ser Ser
 165 170 175

Leu Met Leu Leu Phe Leu Phe Thr Tyr Ile Tyr Leu Gly Glu Val Leu
 180 185 190
 Lys Thr Tyr Asn Val Ala Met Asp Tyr Pro Thr Leu Leu Leu Thr Val
 195 200 205
 Trp Asn Phe Gly Ala Val Gly Met Val Cys Ile His Trp Lys Gly Pro
 210 215 220
 Leu Val Leu Gln Gln Ala Tyr Leu Ile Met Ile Ser Ala Leu Met Ala
 225 230 235 240
 Leu Val Phe Ile Lys Tyr Leu Pro Glu Trp Ser Ala Trp Val Ile Leu
 245 250 255
 Gly Ala Ile Ser Val Tyr Asp Leu Val Ala Val Leu Cys Pro Lys Gly
 260 265 270
 Pro Leu Arg Met Leu Val Glu Thr Ala Gln Glu Arg Asn Glu Pro Ile
 275 280 285
 Phe Pro Ala Leu Ile Tyr Ser Ser Ala Met Val Trp Thr Val Gly Met
 290 295 300
 Ala Lys Leu Asp Pro Ser Ser Gln Gly Ala Leu Gln Leu Pro Tyr Asp
 305 310 315 320
 Pro Glu Met Glu Glu Asp Ser Tyr Asp Ser Phe Gly Glu Pro Ser Tyr
 325 330 335
 Pro Glu Val Phe Glu Pro Pro Leu Thr Gly Tyr Pro Gly Glu Glu Leu
 340 345 350
 Glu Glu Glu Glu Glu Arg Gly Val Lys Leu Gly Leu Gly Asp Phe Ile
 355 360 365
 Phe Tyr Ser Val Leu Val Gly Lys Ala Ala Ala Thr Gly Ser Gly Asp
 370 375 380
 Trp Asn Thr Thr Leu Ala Cys Phe Val Ala Ile Leu Ile Gly Leu Cys
 385 390 395 400
 Leu Thr Leu Leu Leu Leu Ala Val Phe Lys Lys Ala Leu Pro Ala Leu
 405 410 415
 Pro Ile Ser Ile Thr Phe Gly Leu Ile Phe Tyr Phe Ser Thr Asp Asn
 420 425 430
 Leu Val Arg Pro Phe Met Asp Thr Leu Ala Ser His Gln Leu Tyr Ile
 435 440 445

SEQUENCE LISTING

<110> St. George-Hyslop, Peter H.
Rommens, Johanna
Fraser, Paul E.

<120> Alzheimer's Related Proteins and Methods
of Use

<130> 1034/1F810-US1

<140> 09/227,725

<141> 1999-01-08

<160> 4

<170> FastSEQ for Windows Version 3.0

<210> 1

<211> 467

<212> PRT

<213> Homo Sapien

<400> 1

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Arg	Glu	Arg	Gln	Glu	His	Asn	Asp	Arg	Arg	Ser	Leu	Gly	His	Pro	Glu
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Pro	Leu	Ser	Asn	Gly	Arg	Pro	Gln	Gly	Asn	Ser	Arg	Gln	Val	Val	Glu
	50					55				60					
Gln	Asp	Glu	Glu	Glu	Asp	Glu	Glu	Leu	Thr	Leu	Lys	Tyr	Gly	Ala	Lys
65					70					75					80
His	Val	Ile	Met	Leu	Phe	Val	Pro	Val	Thr	Leu	Cys	Met	Val	Val	Val
			85						90					95	
Val	Ala	Thr	Ile	Lys	Ser	Val	Ser	Phe	Tyr	Thr	Arg	Lys	Asp	Gly	Gln
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Leu	Ile	Tyr	Thr	Pro	Phe	Thr	Glu	Asp	Thr	Glu	Thr	Val	Gly	Gln	Arg
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Ala	Leu	His	Ser	Ile	Leu	Asn	Ala	Ala	Ile	Met	Ile	Ser	Val	Ile	Val
	130					135					140				
Val	Met	Thr	Ile	Leu	Leu	Val	Val	Leu	Tyr	Lys	Tyr	Arg	Cys	Tyr	Lys
145					150					155					160
Val	Ile	His	Ala	Trp	Leu	Ile	Ile	Ser	Ser	Leu	Leu	Leu	Leu	Phe	Phe
			165					170						175	
Phe	Ser	Phe	Ile	Tyr	Leu	Gly	Glu	Val	Phe	Lys	Thr	Tyr	Asn	Val	Ala
			180				185						190		
Val	Asp	Tyr	Ile	Thr	Val	Ala	Leu	Leu	Ile	Trp	Asn	Phe	Gly	Val	Val
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Gly	Met	Ile	Ser	Ile	His	Trp	Lys	Gly	Pro	Leu	Arg	Leu	Gln	Gln	Ala
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Tyr	Leu	Ile	Met	Ile	Ser	Ala	Leu	Met	Ala	Leu	Val	Phe	Ile	Lys	Tyr

225					230					235				240
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Asp	Leu	Val	Ala	Val	Leu	Cys	Pro	Lys	Gly	Pro	Leu	Arg	Met	Leu
			260					265					270	
Glu	Thr	Ala	Gln	Glu	Arg	Asn	Glu	Thr	Leu	Phe	Pro	Ala	Leu	Ile
		275					280				285			Tyr
Ser	Ser	Thr	Met	Val	Trp	Leu	Val	Asn	Met	Ala	Glu	Gly	Asp	Pro
	290					295					300			Glu
Ala	Gln	Arg	Arg	Val	Ser	Lys	Asn	Ser	Lys	Tyr	Asn	Ala	Glu	Ser
305					310					315				Thr
Glu	Arg	Glu	Ser	Gln	Asp	Thr	Val	Ala	Glu	Asn	Asp	Asp	Gly	Gly
				325					330				335	Phe
Ser	Glu	Glu	Trp	Glu	Ala	Gln	Arg	Asp	Ser	His	Leu	Gly	Pro	His
			340					345					350	Arg
Ser	Thr	Pro	Glu	Ser	Arg	Ala	Ala	Val	Gln	Glu	Leu	Ser	Ser	Ser
		355					360					365		Ile
Leu	Ala	Gly	Glu	Asp	Pro	Glu	Glu	Arg	Gly	Val	Lys	Leu	Gly	Leu
	370					375					380			Gly
Asp	Phe	Ile	Phe	Tyr	Ser	Val	Leu	Val	Gly	Lys	Ala	Ser	Ala	Thr
385					390					395				Ala
Ser	Gly	Asp	Trp	Asn	Thr	Thr	Ile	Ala	Cys	Phe	Val	Ala	Ile	Leu
				405					410					Ile
Gly	Leu	Cys	Leu	Thr	Leu	Leu	Leu	Leu	Ala	Ile	Phe	Lys	Lys	Ala
			420					425				430		Leu
Pro	Ala	Leu	Pro	Ile	Ser	Ile	Thr	Phe	Gly	Leu	Val	Phe	Tyr	Phe
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Thr	Asp	Tyr	Leu	Val	Gln	Pro	Phe	Met	Asp	Gln	Leu	Ala	Phe	His
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Phe	Tyr	Ile												
465														

<210> 2
 <211> 448
 <212> PRT
 <213> Homo Sapien

<400> 2

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Glu	Gly	Arg	Gln	Gly	Pro	Glu	Asp	Gly	Glu	Asn	Thr	Ala	Gln	Trp	Arg
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Cys	Ser	Gly	Val	Pro	Gly	Arg	Pro	Pro	Gly	Leu	Glu	Glu	Glu	Leu	Thr
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Leu	Lys	Tyr	Gly	Ala	Lys	His	Val	Ile	Met	Leu	Phe	Val	Pro	Val	Thr
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Leu	Cys	Met	Ile	Val	Val	Val	Ala	Thr	Ile	Lys	Ser	Val	Arg	Phe	Tyr
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Thr	Glu	Lys	Asn	Gly	Gln	Leu	Ile	Tyr	Thr	Pro	Phe	Thr	Glu	Asp	Thr
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Met	Ile	Ser	Val	Ile	Val	Val	Met	Thr	Ile	Phe	Leu	Val	Val	Leu	Tyr
145					150					155					160
Lys	Tyr	Arg	Cys	Tyr	Lys	Phe	Ile	His	Gly	Trp	Leu	Ile	Met	Ser	Ser
			165						170					175	
Leu	Met	Leu	Leu	Phe	Leu	Phe	Thr	Tyr	Ile	Tyr	Leu	Gly	Glu	Val	Leu
			180					185					190		
Lys	Thr	Tyr	Asn	Val	Ala	Met	Asp	Tyr	Pro	Thr	Leu	Leu	Leu	Thr	Val
		195					200					205			
Trp	Asn	Phe	Gly	Ala	Val	Gly	Met	Val	Cys	Ile	His	Trp	Lys	Gly	Pro
	210					215					220				
Leu	Val	Leu	Gln	Gln	Ala	Tyr	Leu	Ile	Met	Ile	Ser	Ala	Leu	Met	Ala
225					230					235					240
Leu	Val	Phe	Ile	Lys	Tyr	Leu	Pro	Glu	Trp	Ser	Ala	Trp	Val	Ile	Leu
				245					250					255	
Gly	Ala	Ile	Ser	Val	Tyr	Asp	Leu	Val	Ala	Val	Leu	Cys	Pro	Lys	Gly
			260					265					270		
Pro	Leu	Arg	Met	Leu	Val	Glu	Thr	Ala	Gln	Glu	Arg	Asn	Glu	Pro	Ile
		275					280					285			
Phe	Pro	Ala	Leu	Ile	Tyr	Ser	Ser	Ala	Met	Val	Trp	Thr	Val	Gly	Met
	290					295					300				
Ala	Lys	Leu	Asp	Pro	Ser	Ser	Gln	Gly	Ala	Leu	Gln	Leu	Pro	Tyr	Asp
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Pro	Glu	Met	Glu	Glu	Asp	Ser	Tyr	Asp	Ser	Phe	Gly	Glu	Pro	Ser	Tyr
				325					330					335	
Pro	Glu	Val	Phe	Glu	Pro	Pro	Leu	Thr	Gly	Tyr	Pro	Gly	Glu	Glu	Leu
			340					345					350		
Glu	Glu	Glu	Glu	Glu	Arg	Gly	Val	Lys	Leu	Gly	Leu	Gly	Asp	Phe	Ile
		355				360					365				
Phe	Tyr	Ser	Val	Leu	Val	Gly	Lys	Ala	Ala	Ala	Thr	Gly	Ser	Gly	Asp
	370					375					380				
Trp	Asn	Thr	Thr	Leu	Ala	Cys	Phe	Val	Ala	Ile	Leu	Ile	Gly	Leu	Cys
385					390					395					400
Leu	Thr	Leu	Leu	Leu	Leu	Ala	Val	Phe	Lys	Lys	Ala	Leu	Pro	Ala	Leu
				405				410						415	
Pro	Ile	Ser	Ile	Thr	Phe	Gly	Leu	Ile	Phe	Tyr	Phe	Ser	Thr	Asp	Asn
			420					425					430		
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<210> 3
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 <212> PRT
 <213> Homo Sapien

<220>
 <221> UNSURE
 <222> (115)
 <223> Xaa can be any amino acid

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			20					25					30			
Ser	Asn	Gln	Thr	Leu	Ala	Leu	Glu	Glu	Thr	Thr	Pro	Ser	Gln	Leu	Pro	
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Ala	Arg	Gly	Thr	Gln	Ala	Arg	Ala	Thr	Gly	Gln	Ser	Phe	Ser	Gln	Gly	
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Thr	Thr	Ser	Arg	Ala	Gly	His	Leu	Ala	Gly	Pro	Glu	Pro	Ala	Pro	Pro	
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Pro	Pro	Pro	Pro	Pro	Arg	Glu	Pro	Phe	Ala	Pro	Ser	Leu	Gly	Ser	Ala	
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Phe	His	Leu	Pro	Asp	Ala	Pro	Pro	Ala	Ala	Ala	Ala	Ala	Ala	Leu	Tyr	
			100					105					110			
Tyr	Ser	Xaa	Ser	Thr	Leu	Pro	Ala	Pro	Pro	Arg	Gly	Gly	Ser	Pro	Leu	
		115					120					125				
Ala	Ala	Pro	Gln	Gly	Gly	Ser	Pro	Thr	Lys	Leu	Gln	Arg	Gly	Gly	Ser	
	130					135					140					
Ala	Pro	Glu	Gly	Ala	Thr	Tyr	Ala	Ala	Pro	Arg	Gly	Ser	Ser	Pro	Lys	
145					150					155					160	
Gln	Ser	Pro	Ser	Arg	Leu	Ala	Lys	Ser	Tyr	Ser	Thr	Ser	Ser	Pro	Ile	
				165					170					175		
Asn	Ile	Val	Val	Ser	Ser	Ala	Gly	Leu	Ser	Pro	Ile	Arg	Val	Thr	Ser	
			180					185					190			
Pro	Pro	Thr	Val	Gln	Ser	Thr	Ile	Ser	Ser	Ser	Pro	Ile	His	Gln	Leu	
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Ser	Ser	Thr	Ile	Gly	Thr	Tyr	Ala	Thr	Leu	Ser	Pro	Thr	Lys	Arg	Leu	
	210					215					220					
Val	His	Ala	Ser	Glu	Gln	Tyr	Ser	Lys	His	Ser	Gln	Glu	Leu	Tyr	Ala	
225					230					235					240	
Thr	Ala	Thr	Leu	Gln	Arg	Pro	Gly	Ser	Leu	Ala	Ala	Gly	Ser	Arg	Ala	
				245					250					255		
Ser	Tyr	Ser	Ser	Gln	His	Gly	His	Leu	Gly	Pro	Glu	Leu	Arg	Ala	Leu	
		260						265					270			
Gln	Ser	Pro	Glu	His	His	Ile	Asp	Pro	Ile	Tyr	Glu	Asp	Arg	Val	Tyr	
		275					280					285				
Gln	Lys	Pro	Pro	Met	Arg	Ser	Leu	Ser	Gln	Ser	Gln	Gly	Asp	Pro	Leu	
	290					295					300					
Pro	Pro	Ala	His	Thr	Gly	Thr	Tyr	Arg	Thr	Ser	Thr	Ala	Pro	Ser	Ser	
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Pro	Gly	Val	Asp	Ser	Val	Pro	Leu	Gln	Arg	Thr	Gly	Ser	Gln	His	Gly	
				325					330					335		
Pro	Gln	Asn	Ala	Ala	Ala	Ala	Thr	Phe	Gln	Arg	Ala	Ser	Tyr	Ala	Ala	
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Gly	Pro	Ala	Ser	Asn	Tyr	Ala	Asp	Pro	Tyr	Arg	Gln	Leu	Gln	Tyr	Cys	
		355					360					365				
Pro	Ser	Val	Glu	Ser	Pro	Tyr	Ser	Lys	Ser	Gly	Pro	Ala	Leu	Pro	Pro	
	370					375					380					
Glu	Gly	Thr	Leu	Ala	Arg	Ser	Pro	Ser	Ile	Asp	Ser	Ile	Gln	Lys	Asp	
385					390					395					400	
Pro	Arg	Glu	Phe	Gly	Trp	Arg	Asp	Pro	Glu	Leu	Pro	Glu	Val	Ile	Gln	
				405					410					415		
Met	Leu	Gln	His	Gln	Phe	Pro	Ser	Val	Gln	Ser	Asn	Ala	Ala	Ala	Tyr	
			420					425					430			
Leu	Gln	His	Leu	Cys	Phe	Gly	Asp	Asn	Lys	Ile	Lys	Ala	Glu	Ile	Arg	
		435					440						445			

Arg	Gln	Gly	Gly	Ile	Gln	Leu	Leu	Val	Asp	Leu	Leu	Asp	His	Arg	Met
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Thr	Glu	Val	His	Arg	Ser	Ala	Cys	Gly	Ala	Leu	Arg	Asn	Leu	Val	Tyr
465					470					475					480
Gly	Lys	Ala	Asn	Asp	Asp	Asn	Lys	Ile	Ala	Leu	Lys	Asn	Cys	Gly	Gly
				485					490					495	
Ile	Pro	Ala	Leu	Val	Arg	Leu	Leu	Arg	Lys	Thr	Thr	Asp	Leu	Glu	Ile
			500					505					510		
Arg	Glu	Leu	Val	Thr	Gly	Val	Leu	Trp	Asn	Leu	Ser	Ser	Cys	Asp	Ala
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Leu	Lys	Met	Pro	Ile	Ile	Gln	Asp	Ala	Leu	Ala	Val	Leu	Thr	Asn	Ala
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Val	Ile	Ile	Pro	His	Ser	Gly	Trp	Glu	Asn	Ser	Pro	Leu	Gln	Asp	Asp
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Arg	Lys	Ile	Gln	Leu	His	Ser	Ser	Gln	Val	Leu	Arg	Asn	Ala	Thr	Gly
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Cys	Leu	Arg	Asn	Val	Ser	Ser	Ala	Gly	Glu	Glu	Ala	Arg	Arg	Arg	Met
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Arg	Glu	Cys	Asp	Gly	Leu	Thr	Asp	Ala	Leu	Leu	Tyr	Val	Ile	Gln	Ser
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Ala	Leu	Gly	Ser	Ser	Glu	Ile	Asp	Ser	Lys	Thr	Val	Glu	Asn	Cys	Val
	610					615					620				
Cys	Ile	Leu	Arg	Asn	Leu	Ser	Tyr	Arg	Leu	Ala	Ala	Glu	Thr	Ser	Gln
625					630					635					640
Gly	Gln	His	Met	Gly	Thr	Asp	Glu	Leu	Asp	Gly	Leu	Leu	Cys	Gly	Glu
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Ala	Asn	Gly	Lys	Asp	Ala	Glu	Ser	Ser	Gly	Cys	Trp	Gly	Lys	Lys	Lys
			660					665					670		
Lys	Lys	Lys	Lys	Ser	Gln	Asp	Gln	Trp	Asp	Gly	Val	Gly	Pro	Leu	Pro
		675					680					685			
Asp	Cys	Ala	Glu	Pro	Pro	Lys	Gly	Ile	Gln	Met	Leu	Trp	His	Pro	Ser
	690					695					700				
Ile	Val	Lys	Pro	Tyr	Leu	Thr	Leu	Leu	Ser	Glu	Cys	Ser	Asn	Pro	Asp
705					710					715					720
Thr	Leu	Glu	Gly	Ala	Ala	Gly	Ala	Leu	Gln	Asn	Leu	Ala	Ala	Gly	Ser
				725					730					735	
Trp	Lys	Trp	Ser	Val	Tyr	Ile	Arg	Ala	Ala	Val	Arg	Lys	Glu	Lys	Gly
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Leu	Pro	Ile	Leu	Val	Glu	Leu	Leu	Arg	Ile	Asp	Asn	Asp	Arg	Val	Val
		755					760					765			
Cys	Ala	Val	Ala	Thr	Ala	Leu	Arg	Asn	Met	Ala	Leu	Asp	Val	Arg	Asn
	770					775					780				
Lys	Glu	Leu	Ile	Gly	Lys	Tyr	Ala	Met	Arg	Asp	Leu	Val	His	Arg	Leu
785					790					795					800
Pro	Gly	Gly	Asn	Asn	Ser	Asn	Asn	Thr	Ala	Ser	Lys	Ala	Met	Ser	Asp
			805						810					815	
Asp	Thr	Val	Thr	Ala	Val	Cys	Cys	Thr	Leu	His	Glu	Val	Ile	Thr	Lys
			820					825					830		
Asn	Met	Glu	Asn	Ala	Lys	Ala	Leu	Arg	Asp	Ala	Gly	Gly	Ile	Glu	Lys
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Leu	Val	Gly	Ile	Ser	Lys	Ser	Lys	Gly	Asp	Lys	His	Ser	Pro	Lys	Val
	850					855					860				
Val	Lys	Ala	Ala	Ser	Gln	Val	Leu	Asn	Ser	Met	Trp	Gln	Tyr	Arg	Asp
865					870					875					880

Leu	Arg	Ser	Leu	Tyr	Lys	Lys	Asp	Gly	Trp	Ser	Gln	Tyr	His	Phe	Val
				885					890					895	
Ala	Ser	Ser	Ser	Thr	Ile	Glu	Arg	Asp	Arg	Gln	Arg	Pro	Tyr	Ser	Ser
			900					905					910		
Ser	Arg	Thr	Pro	Ser	Ile	Ser	Pro	Val	Arg	Val	Ser	Pro	Asn	Asn	Arg
		915					920					925			
Ser	Ala	Ser	Ala	Pro	Ala	Ser	Pro	Arg	Glu	Met	Ile	Ser	Leu	Lys	Glu
	930					935					940				
Arg	Lys	Thr	Asp	Tyr	Glu	Cys	Thr	Gly	Ser	Asn	Ala	Thr	Tyr	His	Gly
945					950					955					960
Gly	Lys	Gly	Glu	His	Thr	Ser	Arg	Lys	Asp	Ala	Met	Thr	Ala	Gln	Asn
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Thr	Gly	Ile	Ser	Thr	Leu	Tyr	Arg	Asn	Ser	Tyr	Gly	Ala	Pro	Ala	Glu
			980					985					990		
Asp	Ile	Lys	His	Asn	Gln	Val	Ser	Ala	Gln	Pro	Val	Pro	Gln	Glu	Pro
		995					1000					1005			
Ser	Arg	Lys	Asp	Tyr	Glu	Thr	Tyr	Gln	Pro	Phe	Gln	Asn	Ser	Thr	Arg
	1010					1015					1020				
Asn	Tyr	Asp	Glu	Ser	Phe	Phe	Glu	Asp	Gln	Val	His	His	Arg	Pro	Pro
1025					1030					1035					1040
Ala	Ser	Glu	Tyr	Thr	Met	His	Leu	Gly	Leu	Lys	Ser	Thr	Gly	Asn	Tyr
				1045					1050					1055	
Val	Asp	Phe	Tyr	Ser	Ala	Ala	Arg	Pro	Tyr	Ser	Glu	Leu	Asn	Tyr	Glu
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Thr	Ser	His	Tyr	Pro	Ala	Ser	Pro	Asp	Ser	Trp	Val				
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<210> 4

<211> 1193

<212> PRT

<213> Homo Sapien

<400> 4

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Thr	Arg	Gln	Glu	Ala	Ala	Ser	Thr	Gly	Pro	Cys	Met	Glu	Pro	Glu	Thr
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Thr	Ala	Thr	Thr	Ile	Leu	Ala	Ser	Val	Lys	Glu	Gln	Glu	Leu	Gln	Phe
		35					40					45			
Gln	Arg	Leu	Thr	Arg	Glu	Leu	Glu	Val	Glu	Arg	Gln	Ile	Val	Ala	Ser
	50					55					60				
Gln	Leu	Glu	Arg	Cys	Arg	Leu	Gly	Ala	Glu	Ser	Pro	Ser	Ile	Ala	Ser
65					70					75					80
Thr	Ser	Ser	Thr	Glu	Lys	Ser	Phe	Pro	Trp	Arg	Ser	Thr	Asp	Val	Pro
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Asn	Thr	Gly	Val	Ser	Lys	Pro	Arg	Val	Ser	Asp	Ala	Val	Gln	Pro	Asn
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Asn	Tyr	Leu	Ile	Arg	Thr	Glu	Pro	Glu	Gln	Gly	Thr	Leu	Tyr	Ser	Pro
		115					120					125			
Glu	Gln	Thr	Ser	Leu	His	Glu	Ser	Glu	Gly	Ser	Leu	Gly	Asn	Ser	Arg
	130					135					140				
Ser	Ser	Thr	Gln	Met	Asn	Ser	Tyr	Ser	Asp	Ser	Gly	Tyr	Gln	Glu	Ala
145					150					155					160

Cys	Ser	Phe	His	Asn	Ser	Gln	Asn	Val	Ser	Lys	Ala	Asp	Asn	Arg	Gln
				165					170					175	
Gln	His	Ser	Phe	Ile	Gly	Ser	Thr	Asn	Asn	His	Val	Val	Arg	Asn	Ser
			180					185					190		
Arg	Ala	Glu	Gly	Gln	Thr	Leu	Val	Gln	Pro	Ser	Val	Ala	Asn	Arg	Ala
		195					200					205			
Met	Arg	Arg	Val	Ser	Ser	Val	Pro	Ser	Arg	Ala	Gln	Ser	Pro	Ser	Tyr
	210					215					220				
Val	Ile	Ser	Thr	Gly	Val	Ser	Pro	Ser	Arg	Gly	Ser	Leu	Arg	Thr	Ser
225					230					235					240
Leu	Gly	Ser	Gly	Phe	Gly	Ser	Pro	Ser	Val	Thr	Asp	Pro	Arg	Pro	Leu
				245					250					255	
Asn	Pro	Ser	Ala	Tyr	Ser	Ser	Thr	Thr	Leu	Pro	Ala	Ala	Arg	Ala	Ala
			260					265					270		
Ser	Pro	Tyr	Arg	Ser	Gln	Arg	Pro	Ala	Ser	Pro	Thr	Ala	Ile	Arg	Arg
		275					280					285			
Ile	Gly	Ser	Val	Thr	Ser	Arg	Gln	Thr	Ser	Asn	Pro	Asn	Gly	Pro	Thr
	290					295					300				
Pro	Gln	Tyr	Gln	Thr	Thr	Ala	Arg	Val	Gly	Ser	Pro	Leu	Thr	Leu	Thr
305					310					315					320
Asp	Ala	Gln	Thr	Arg	Val	Ala	Ser	Pro	Ser	Gln	Gly	Gln	Val	Cys	Ser
				325					330					335	
Ser	Ser	Pro	Lys	Arg	Ser	Gly	Met	Thr	Ala	Val	Pro	Gln	His	Leu	Gly
			340					345					350		
Pro	Ser	Leu	Gln	Arg	Thr	Val	His	Asp	Met	Glu	Gln	Phe	Cys	Gln	Gln
		355					360					365			
Gln	Tyr	Asp	Ile	Tyr	Glu	Arg	Met	Val	Pro	Pro	Arg	Pro	Asp	Ser	Leu
	370					375					380				
Thr	Cys	Leu	Arg	Ser	Ser	Tyr	Ala	Ser	Gln	His	Ser	Gln	Leu	Gly	Gln
385					390					395					400
Asp	Ile	Arg	Ser	Ala	Val	Ser	Pro	Asp	Leu	His	Ile	Thr	Pro	Ile	Tyr
				405					410					415	
Glu	Cys	Arg	Thr	Tyr	Tyr	Tyr	Ser	Pro	Val	Tyr	Arg	Ser	Pro	Asn	His
			420					425					430		
Cys	Ile	Val	Glu	Leu	Gln	Gly	Ser	Gln	Thr	Ala	Leu	Tyr	Arg	Thr	Cys
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	450					455						460			
Leu	Thr	Tyr	Gln	Arg	Asn	Asn	Tyr	Ala	Leu	Asn	Thr	Thr	Ala	Thr	Tyr
465					470					475					480
Ala	Glu	Pro	Tyr	Arg	Pro	Ile	Gln	Tyr	Arg	Val	Gln	Glu	Cys	Asn	Tyr
				485					490					495	
Asn	Arg	Leu	Gln	His	Ala	Val	Pro	Ala	Asp	Asp	Gly	Thr	Thr	Arg	Ser
			500					505					510		
Pro	Ser	Ile	Asp	Ser	Ile	Gln	Lys	Asp	Pro	Arg	Glu	Phe	Ala	Trp	Arg
		515					520					525			
Asp	Pro	Glu	Leu	Pro	Glu	Val	Ile	His	Met	Leu	Glu	His	Gln	Phe	Phe
	530					535					540				
Ser	Val	Gln	Ala	Asn	Ala	Ala	Tyr	Leu	Gln	His	Ile	Cys	Phe	Gly	
545					550				555					560	
Asp	Asn	Lys	Val	Lys	Met	Glu	Val	Cys	Arg	Leu	Cys	Gly	Ile	Lys	His
				565					570					575	
Leu	Val	Asp	Leu	Leu	Asp	His	Arg	Val	Leu	Glu	Val	Gln	Lys	Asn	Ala
			580					585					590		

Cys	Gly	Ala	Leu	Arg	Asn	Leu	Val	Phe	Gly	Lys	Ser	Thr	Asp	Glu	Asn	
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Lys	Ile	Ala	Met	Lys	Asn	Val	Gly	Gly	Ile	Phe	Ala	Leu	Leu	Arg	Ile	
	610					615					620					
Ile	Arg	Lys	Ser	Ile	Asp	Ala	Glu	Val	Arg	Glu	Ile	Val	Thr	Gly	Val	
625					630					635					640	
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			660					665					670			
Trp	Asn	Asn	Ser	Ser	Phe	Asp	Asp	Asp	His	Lys	Ile	Lys	Phe	Gln	Thr	
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Ser	Leu	Val	Leu	Arg	Asn	Thr	Thr	Gly	Cys	Leu	Arg	Asn	Leu	Thr	Ser	
	690					695					700					
Ala	Gly	Glu	Phe	Ala	Arg	Lys	Gln	Met	Arg	Ser	Cys	Glu	Gly	Leu	Val	
705					710					715					720	
Asp	Ser	Leu	Leu	Tyr	Val	Ile	His	Thr	Cys	Val	Asn	Thr	Ser	Asp	Tyr	
				725					730					735		
Asp	Ser	Lys	Thr	Val	Glu	Asn	Cys	Val	Cys	Thr	Leu	Arg	Asn	Leu	Ser	
			740					745					750			
Tyr	Arg	Leu	Glu	Leu	Glu	Val	Pro	Gln	Ala	Arg	Leu	Leu	Gly	Leu	Asn	
		755					760					765				
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	770					775					780					
Pro	Ser	Cys	Trp	Gly	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Arg	Thr	Pro	Gln	
785					790					795					800	
Pro	Gln	Glu	Asp	Gln	Trp	Asp	Cys	Val	Gly	Pro	Ile	Pro	Gly	Leu	Ser	
				805					810					815		
Lys	Ser	Pro	Lys	Gly	Val	Glu	Met	Leu	Trp	His	Pro	Ser	Val	Val	Lys	
			820					825					830			
Pro	Tyr	Leu	Thr	Leu	Leu	Ala	Glu	Ser	Ser	Asn	Pro	Ala	Thr	Leu	Glu	
		835					840					845				
Cys	Ser	Ala	Cys	Ser	Leu	Gln	Asn	Leu	Ser	Ala	Ser	Asn	Trp	Lys	Phe	
		850				855					860					
Ala	Ala	Tyr	Ile	Arg	Gly	Gly	Arg	Pro	Lys	Arg	Lys	Cys	Leu	Pro	Ile	
865					870					875					880	
Leu	Val	Glu	Leu	Leu	Arg	Met	Asp	Asn	Asp	Arg	Val	Val	Ser	Ser	Cys	
				885					890					895		
Ala	Thr	Ala	Leu	Arg	Asn	Met	Ala	Leu	Asp	Val	Asn	Lys	Glu	Leu	Ile	
			900					905					910			
Cys	Lys	Tyr	Ala	Met	Arg	Asp	Leu	Val	Asn	Arg	Leu	Pro	Cys	Cys	Asn	
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	930					935					940					
Leu	His	Glu	Val	Thr	Ser	Lys	Asn	Met	Glu	Asn	Ala	Lys	Ala	Leu	Ala	
945					950					955					960	
Asp	Ser	Gly	Gly	Ile	Glu	Lys	Leu	Val	Asn	Ile	Thr	Lys	Gly	Arg	Gly	
				965					970					975		
Asp	Arg	Ser	Ser	Leu	Lys	Val	Val	Lys	Ala	Ala	Ala	Gln	Val	Leu	Asn	
			980					985					990			
Thr	Leu	Trp	Gln	Tyr	Arg	Asp	Leu	Arg	Ser	Ile	Tyr	Lys	Lys	Asp	Gly	
		995					1000					1005				
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[illegible]